

GEORGE YATSKIEVYCH. 1999. *Steyermark's Flora of Missouri-Volume 1. Revised Ed.* (ISBN: 1-887247-19-X, hbk). Missouri Department of Conservation, P.O. Box 180, Jefferson City, MO 65201-0180; in cooperation with The Missouri Botanical Garden Press, P.O. Box 299. St. Louis, MO 63166. \$38.00. xii + 991 pp., 194 plates of black and white line drawings; 20 figures, including 27 individual black and white photographs; 798 distribution maps.

The long awaited and much anticipated revision of volume one of Julian Steyermark's 1963 classic *Flora of Missouri (Flora)* was finally published during the first quarter of 1999. Given the outstanding quality of the Yatskievych's treatment of the monocots in volume one, it was well worth the wait! The book is so well written, organized, researched, illustrated, thorough, and scholarly done, that one must struggle to find fault. In the dedication to Julian Steyermark, the author humbly asks if Steyermark had still been present with us, would he have approved the book's contents? Not only do I believe that Steyermark would have answered with a very enthusiastic and resounding, 'Yes!', but I am confident that he would agree that this will surely be recorded as one of the greatest treatments of monocots ever written!

Volume one of the *Flora* consists of two parts: 1) and introduction, and 2) the *Flora* itself. The first part is so well written and enjoyable to read, that it delivers like a 91-page natural history novel. Printed separately, this part would probably be a number one best seller! The introduction includes: 1) a history of floristic botany in Missouri; 2) an analysis of changes in the state's native and introduced plant taxa since Steyermark's original treatment; 3) a description of the different natural divisions and plant communities within the state; and 4) a discussion on how the evolutionary history, geography, climate, geology, landscape features, and anthropogenic affects of man in Missouri have influenced the distribution and ecology of the state's flora.

The second part, a 900 page *Flora*, is nothing short of a masterpiece that will undoubtedly set a high standard of excellence for similar treatments in the future! Although space would not allow a listing of all the highlights of this section, a few are worth mentioning. The first and most obvious is the thoroughness, accuracy, and comprehensiveness of the treatments of the families, genera, and species discussed. It should be obvious to any reader that several sources of information were used in compilation of the written text. These included: 1) an exhaustive review of the published and unpublished literature (an incredible 694 references cited!) involving the taxonomy, systematics, ecology, distribution, and description of the taxa discussed; 2) an examination of thousands of museum specimens; 3) communication with numerous professional and amateur botanists who actively collect in the state; 4) correspondence and cooperation with leading experts and authorities of the groups covered; and 5) hundreds of hours of field investigations that were necessary to clarify the distribution of numerous species.

I found the keys easy to use and follow, especially those of the larger or more difficult groups (e.g., *Carex*, *Cyperus*, *Eleocharis*, *Eragrostis*, *Panicum*, Poaceae, and Pteridophytes). One plus for the keys is that the author painstakingly covered numerous exceptions found in many groups by lengthening the keys to cover such variations often typical for different monocot taxa.

Another obvious highlight is the exquisite detail displayed in the numerous illustrations, all of which were newly produced for this portion of *The Flora*. The line drawings of

each species depicted are some of the most accurate and detailed illustrations I have ever observed. Although the overall quality of the illustrations of the nine different artists used are excellent, I would do this review a great injustice if I did not separately mention the outstanding quality of the drawings provided by Paul Nelson (Acoraceae, Araceae, *Carex*) and Phyllis Bick [Agavaceae, Alismataceae, Cupressaceae, Cyperaceae (in part), ferns & fern allies, Marantaceae, Najadaceae, Orchidaceae, and Poaceae (in part)]. Nelson's illustrations are so accurate and complete that any reader will easily fall victim to modification of a recent commercial, 'bet you can't view just one!'. His line drawings are so stunning in their detail and accuracy that he is one artist who would actually become very successful if he should ever decide 'to quit his day job!'. Likewise, Bick's drawings provide exceptionally accurate depictions of groups many artists have a challenging time correctly illustrating such as difficult species within the Cyperaceae and Poaceae. It is always refreshing to find a recent flora that has been newly illustrated, especially when the drawings are as well done as with this work.

Another high point of the book is that a separate description, county distribution map, and habitat affinities are provided for well over 99% of the taxa discussed. The only exceptions are for those few species that were discovered just as the book was being finalized before going to the printer.

No review of this book's highlights would be complete without a comment on how inexpensive it is, especially for a well bound hard copy with 991 pages. At \$38, the book is a steal and easily affordable, even for those on a tight budget.

Although negative points about the book are hard to find, a few should be discussed. The most obvious short coming is that it is difficult to find individual species of *Carex* without knowing ahead of time what Section they are in, or similarly locating genera of grasses without prior knowledge of their tribal affiliation. While this will not be a hindrance to experts working with *Carex* and the Poaceae, it will be problematic for anyone who lacks the necessary expertise for such groups. Although there is an excellent index following the literature cited section, it is very cumbersome to move back and forth through such a heavy book. A simple solution would have been to provide an index to *Carex* species and grass genera at the beginning of each respective treatment.

The author's designations for abundance for some species are hard to comprehend. It is difficult to understand how species that are known from only one or two records in the state (e.g., *Carex atherodes*, *Carex laxiflora*, *Carex rotiformis*, *Carex sartwellii*, *Carex straminea*, and *Carex willdenowii*) can be given the same 'uncommon' designation as species known from multiple counties (e.g., *Carex burbanii*, *Carex molestiformis*, *Carex vesicaria*) and in some cases, represented by tens of thousands of plants in specific populations (e.g., *Carex arkansana*).

Although overall the illustrations for the Poaceae are extremely accurate, the depiction of only portions of some species prevents a full appreciation of the general habit for certain taxa (e.g., *Poa wolfii*, *Oryzopsis racemosa*, *Elymus riparius*, *Miscanthus* spp., and *Eriantbus* spp.).

One noteworthy error is that the last sentence in the discussion of *Bouteloua hirsuta* on page 678 applies to *B. gracilis* as the latter is the rarer of the two in the state that is currently only known from one extant site in Atchison County. Another is associated with the key to the Section Griseae and discovered by the author himself- the second parts of couplet three: "lowermost pistillate scales with the bodies much shorter than the associated perigynia (vs. as long as or longer than the associated perigynia)" should be moved to become the respective second parts of couplet five because *C. oligocarpa* and *C. planispicata* have the bodies of the lowermost pistillate scales shorter than the associated perigynia. As currently written in the key, *C. oligocarpa* and *C. planispicata* would incorrectly key out

to *C. flaccosperma* or *C. glaucoidea*. Additionally, it would have been helpful if the artist would have illustrated a lowermost pistillate scale for *C. grisea* and *C. amphibola* (rather than one situated farther up the pistillate spike) so that the illustrations on pages 245 of these two species would correspond with the key on page 247 and the text on pages 247 and 252.

The following items are examples of minor errata: 1) the total introduced taxa on page 83 should read 820 rather than 20, 2) the achene of *Carex oklahomensis* illustrated on page 355 should show two stigmas rather than three, 3) the illustrations for *Bothriochloa laguroides* and *B. bladhii* on page 593 are reversed, 4) the word 'fertile' in the last couplet of the key to *Ophioglossum* on page 140 should be replaced with 'sterile', 5) five or six leaves are listed in the genus description of *Isotria* but only four leaves are depicted in the illustration of *Isotria medeoloides*, 6) Section Intermediae should be listed in the legend of Plate 41 for *Carex sartwellii*, and not Hymenochlaenae, and 7) Section Laxiflorae should be listed in the legend of Plate 41 for *Carex blanda*, and not Hymenochlaenae.

The negative points listed above are so minor and insignificant compared to the overall excellence of this book, that they are nearly not worth mentioning. Given the quality and price of this masterpiece, *Steyermark's The Flora of Missouri- Volume 1*, should be on the shelf of every botanist, naturalist, and plant enthusiast in the Midwest! Additionally, it will be a welcomed reference that will undoubtedly be in high demand throughout botanical circles in North America and abroad. Along with Diggs et al. 1999 excellent *Illustrated Flora of North Central Texas* (see Marshall Johnston's complimentary review in the September 1999 issue of *Sida*), *Steyermark's The Flora of Missouri- Volume 1*, is definitely a "must buy" botanical reference!—Paul M. McKenzie